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EXAMINER
DEAN, RAYMOND S

ART UNIT	PAPER NUMBER
2684	

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DATE MAILED: 12/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/823,905	MILLER ET AL.	
	Examiner	Art Unit	
	Raymond S Dean	2684	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 August 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 - 19 and 21 - 25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 - 19 and 21 - 25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *1203*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed August 23, 2004 have been fully considered but they are not persuasive.

Hanawa teaches a mobile phone that can be connected to a car telephone used as a booster via a connector to take advantage of the higher transmitter power output power provided by said booster (Figure 1, Column 1 lines 11 – 19, Column 3 lines 35 – 37). Hanawa further teaches a detection of a DC offset at said connector when said mobile phone is connected or disconnected (Figure 7, Column 8 lines 60 – 67, Column 9 lines 1 – 3, when the booster is connected there is a short which means that there will be a low voltage level, when said booster is disconnected there will be a high voltage level, a DC offset is a voltage level, detector unit (96)).

Barber teaches an RF connector that enables the connection of the mobile phone to a booster (Column 5 lines 7 – 10, since there is an RF coaxial cable there is an inherent connector for the connection of said RF coaxial cable).

Hanawa and Barber both teach a mobile phone connected to a booster wherein said booster transmits an RF signal at a higher power level than the power level of said RF signal transmitted directly from said mobile phone. It therefore would have been obvious to one of ordinary skill in the art at the time the invention was made to use RF connector taught by Barber as an alternative to the connector taught in Hanawa for the purpose of providing a transmission

medium for said RF signal as taught by Barber thereby eliminating the base band circuitry housed in the booster of Hanawa thus simplifying the booster design architecture.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1 – 3, 5, 7, 8 – 10, 12 – 18, and 22 - 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hanawa et al. (5,890,077) in view of Barber (US 6,230,031 B1).

Regarding Claim 1, Hanawa teaches a system comprising: a radio modem unit (Column 4 lines 16 – 29, the base band data modulates an RF carrier such that said base band data can be transmitted to the base station, the RF signal received from said base station is demodulated such that the base band data can be received thus the portable phone is acting as the radio modem); and an RF signal booster unit (Figure 7, Column 8 lines 30 – 32), wherein the booster unit is connectable to the radio modem unit with a connector (Figure 7, Column 8 line 39), wherein a DC offset at the connector is detected to determine whether the booster unit is connected to the radio modem (Column 8 lines 60 – 67, Column 9 lines 1 – 3, when the booster is connected there is a short which means that

there will be a low voltage level, when said booster is disconnected there will be a high voltage level, a DC offset is a voltage level).

Hanawa does not specifically teach a connector adapted to transmit RF signals.

Barber teaches a connector adapted to transmit RF signals (Column 5 lines 7 – 10, since there is an RF coaxial cable there is an inherent connector for the connection of said RF coaxial cable).

Hanawa and Barber both teach a booster for a mobile terminal thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the connector taught above in Barber in the booster system of Hanawa for the purpose of providing a medium for transmission of signals from the portable terminal to the booster thus simplifying the design of said booster.

Regarding Claim 2, Hanawa in view of Barber teaches all of the claimed limitations recited in Claim 1. Hanawa further teaches wherein the connector connects to a connection line between the radio modem unit and the booster unit (Figure 7, Column 8 line 39, since the connector connects the portable phone to the booster there is an inherent connection line).

Regarding Claim 3, Hanawa in view of Barber teaches all of the claimed limitations recited in Claim 1. Hanawa further teaches wherein the offset detection circuitry is located within the radio modem unit (Figure 7, Column 8 lines 38 – 39).

Regarding Claim 5, Hanawa in view of Barber teaches all of the claimed limitations recited in Claim 1. Hanawa further teaches wherein the booster unit includes an element to reduce the DC power level to low if the radio modem unit is connected to the booster unit (Column 8 lines 60 – 67, Column 9 lines 1 – 3).

Regarding Claim 7, Hanawa in view of Barber teaches all of the claimed limitations recited in Claim 1. Hanawa further teaches wherein the voltage at the connector of the radio modem unit is high if no booster unit is connected but is low if a booster unit is connected (Column 8 lines 60 – 67, Column 9 lines 1 – 3, when the booster is connected there is a short which means that there will be a low voltage level, when said booster is disconnected there will be a high voltage level, a DC offset is a voltage level).

Regarding Claim 8, Hanawa teaches a radio modem unit comprising a radio (Column 4 lines 16 – 29, since the portable phone transmits/receives RF signals there is an inherent radio); a connector operably connected to the radio, the connector being connectable to a RF antenna or a booster unit (Figure 7, Column 8 line 39); and a detector unit adapted to detect a DC offset at the connector to determine whether the connector is connected to a booster unit (Column 8 lines 60 – 67, Column 9 lines 1 – 3, when the booster is connected there is a short which means that there will be a low voltage level, when said booster is disconnected there will be a high voltage level, a DC offset is a voltage level).

Hanawa does not specifically teach an RF signal connector.

Barber teaches an RF signal connector (Column 5 lines 7 – 10, since there is an RF coaxial cable there is an inherent connector for the connection of said RF coaxial cable).

Hanawa and Barber both teach a booster for a mobile terminal thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the connector taught above in Barber in the booster system of Hanawa for the purpose of providing a medium for transmission of signals from the portable terminal to the booster thus simplifying the design of said booster.

Regarding Claim 9, Hanawa in view of Barber teaches all of the claimed limitations recited in Claim 8. Hanawa further teaches wherein the connector is connectable to a connector line, which can connect the radio modem unit to a booster unit (Figure 7, Column 8 line 39, since the connector connects the portable phone to the booster there is an inherent connector line).

Regarding Claim 10, Hanawa in view of Barber teaches all of the claimed limitations recited in Claim 8. Hanawa further teaches wherein the DC offset of the connector is high if no booster unit is connected but is low if a booster unit is connected (Column 8 lines 60 – 67, Column 9 lines 1 – 3, when the booster is connected there is a short which means that there will be a low voltage level, when said booster is disconnected there will be a high voltage level, a DC offset is a voltage level).

Regarding Claim 12, Hanawa in view of Barber teaches all of the claimed limitations recited in Claim 8. Hanawa further teaches wherein the radio modem

unit is connected to a booster unit, the booster unit including a circuit to pull the DC offset at the connector to low (Column 8 lines 60 – 67, Column 9 lines 1 – 3).

Regarding Claim 13, Hanawa teaches a system comprising: a radio modem unit (Column 4 lines 16 – 29, the base band data modulates an RF carrier such that said base band data can be transmitted to the base station, the RF signal received from said base station is demodulated such that the base band data can be received thus the portable phone is acting as the radio modem); and an RF signal booster unit, wherein the booster unit is connectable to the radio modem unit with a single connector (Figure 7, Column 8 line 39).

Hanawa does not specifically teach a coaxial connector adapted to transmit RF signals and wherein base band signals are transmitted to the RF signal booster unit by way of the single coaxial connector by the radio modem and are used by the booster unit to prepare for transmission.

Barber teaches a coaxial connector adapted to transmit RF signals (Column 5 lines 7 – 10, since there is an RF coaxial cable there is an inherent coaxial connector for the connection of said RF coaxial cable) and wherein base band signals are transmitted to the RF signal booster by the radio modem and are used by the booster unit to prepare for transmission (Figure 4, Figure 5, Figure 6, Column 5 lines 15 – 18, Column 5 lines 30 – 46, Column 6 lines 5 – 55, the CPU in the wireless radio transceiver and the CPU in the booster module communicate via digital control messages, the CPUs communicate via signals that are in the digital information range which is the range where the digital

information signal has not been mixed with a high frequency carrier such that it modulates said carrier, this is the base band range).

Hanawa and Barber both teach a booster for a mobile terminal thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the connector and control signals taught above in Barber in the booster system of Hanawa for the purpose of providing a medium for transmission of signals from the portable terminal to the booster thus simplifying the design of said booster and for the purpose of adjusting the power of said booster.

Regarding Claim 14, Hanawa in view of Barber teaches all of the claimed limitations recited in Claim 13. Hanawa further teaches wherein a connector line is connected between the connector at the RF signal booster unit to a connector at the radio modem unit (Figure 7, Column 8 line 39, since the connector connects the portable phone to the booster there is an inherent connector line).

Regarding Claim 15, Hanawa in view of Barber teaches all of the claimed limitations recited in Claim 13. Barber further teaches wherein the base band signals are power control signals (Figure 4, Figure 5, Figure 6, Column 5 lines 15 – 18, Column 5 lines 30 – 46, Column 6 lines 5 – 55, the CPU in the wireless radio transceiver and the CPU in the booster module communicate via digital control messages, the CPUs communicate via signals that are in the digital information range which is the range where the digital information signal has not been mixed with a high frequency carrier such that it modulates said carrier, this is the base band range).

Regarding Claim 16, Hanawa in view of Barber teaches all of the claimed limitations recited in Claim 13. Barber further teaches wherein the power control signals are used to control the power and channel (Column 5 lines 30 – 46, the channel can be the 800 MHz band or the 1.9 GHz band).

Regarding Claim 17, Hanawa in view of Barber teaches all of the claimed limitations recited in Claim 13. Barber further teaches wherein the RF signal booster unit that includes a switch in the transmit line that prevents RF energy from being provided to a power amplifier in the booster unit until a valid power controller message is received from the wireless radio transceiver (Figure 4, Figure 5, Figure 6, Figure 9, Figure 10, Column 5 lines 15 – 18, Column 5 lines 30 – 46, Column 6 lines 5 – 55, Column 10 lines 17 – 24, the diodes/switches are reversed biased such that the incoming signal is severely attenuated thereby causing the signal transmission portion of the amplifier circuit to shut down, the CPU in the wireless radio transceiver and the CPU in the booster module communicate via digital control messages, the CPU in the booster module will reverse bias the diodes such that a particular amplification circuit will shut down based on the mode of the wireless radio transceiver, said radio transceiver mode control message is transmitted by the wireless radio transceiver CPU to the booster module CPU such that the booster module is configured to produce the correct power level),

Regarding Claim 18, Hanawa in view of Barber teaches all of the claimed limitations recited in Claim 13. Hanawa further teaches wherein DC offset signals are sent between the radio modem and booster unit to indicate whether

the radio modem is connected to the booster unit (Column 8 lines 60 – 67, Column 9 lines 1 – 3, when the booster is connected there is a short which means that there will be a low voltage level, when said booster is disconnected there will be a high voltage level, a DC offset is a voltage level).

Regarding Claim 22, Hanawa teaches a method of using a radio modem unit and an RF signal booster unit, the booster unit and radio modem unit connectable using a connector (Figure 7, Column 8 line 39), the method comprising: in the radio modem unit, detecting a DC offset on the connector to determine whether the booster unit is connected (Column 8 lines 60 – 67, Column 9 lines 1 – 3, when the booster is connected there is a short which means that there will be a low voltage level, when said booster is disconnected there will be a high voltage level, a DC offset is a voltage level);

Hanawa does not teach transmitting base band signals on the connector from the radio modem to the booster unit to allow the booster unit to prepare for transmission; and thereafter, transmitting an RF signal on the connector from the radio modem to the booster unit.

Barber teaches transmitting base band signals on a connector from the radio modem to the booster unit to allow the booster unit to prepare for transmission (Figure 4, Figure 5, Figure 6, Column 5 lines 15 – 18, Column 5 lines 30 – 46, Column 6 lines 5 – 55, the CPU in the wireless radio transceiver and the CPU in the booster module communicate via digital control messages, the CPUs communicate via signals that are in the digital information range which is the range where the digital information signal has not been mixed with a high

frequency carrier such that it modulates said carrier, this is the base band range); and thereafter, transmitting an RF signal on a connector from the radio modem to the booster unit (Column 5 lines 7 – 10).

Hanawa and Barber both teach a booster for a mobile terminal thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the base band signals taught above in Barber in the booster system of Hanawa for the purpose of adjusting the power of said booster.

Regarding Claim 23, Hanawa in view of Barber teaches all of the claimed limitations recited in Claim 22. Hanawa further teaches wherein the connector line connects between the radio modem unit and an RF signal booster unit (Figure 7, Column 8 line 39, since the connector connects the portable phone to the booster there is an inherent connection line).

Regarding Claim 24, Hanawa in view of Barber teaches all of the claimed limitations recited in Claim 22. Barber further teaches wherein the base band signal is the power control signal (Figure 4, Figure 5, Figure 6, Column 5 lines 15 – 18, Column 5 lines 30 – 46, Column 6 lines 5 – 55, the CPU in the wireless radio transceiver and the CPU in the booster module communicate via digital control messages, the CPUs communicate via signals that are in the digital information range which is the range where the digital information signal has not been mixed with a high frequency carrier such that it modulates said carrier, this is the base band range).

Regarding Claim 25, Barber teaches all of the claimed limitations recited in Claim 24. Barber further teaches wherein the power control signal includes a channel control and power level indications (Figure 4, Figure 5, Figure 6, Column 5 lines 15 – 18, Column 5 lines 30 – 46, Column 6 lines 5 – 55, the channel can be the 800 MHz band or the 1.9 GHz band).

4. Claims 19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barber (US 6,230,031 B1) in view of Lind (4,371,749).

Regarding Claim 19, Barber teaches an RF signal booster unit adapted to amplify RF signals from a radio modem, (Abstract, Figure 1, Figure 4, Figure 5, Column 4 lines 66 – 67, Column 5 lines 1 – 10, the radio transceiver modulates and demodulates the signals that are transmitted and received thus said radio transceiver is acting as the radio modem), the booster unit including a switch that significantly attenuates the RF energy from the radio modem that is provided to a power amplifier in the booster unit (Figure 9, Figure 10, Column 10 lines 17 – 24, the diodes/switches are reversed biased such that the incoming signal is severely attenuated thereby causing the signal transmission portion of the amplifier circuit to shut down), until a valid power control message is received from the radio modem (Figure 4, Figure 5, Figure 6, Column 5 lines 15 – 18, Column 5 lines 30 – 46, Column 6 lines 5 – 55, the CPU in the wireless radio transceiver and the CPU in the booster module communicate via digital control messages, the CPU in the booster module will reverse bias the diodes such that a particular amplification circuit will shut down based on the mode of the wireless

radio transceiver, said radio transceiver mode control message is transmitted by the wireless radio transceiver CPU to the booster module CPU such that the booster module is configured to produce the correct power level), the switch comprising a pair of diodes disposed in the RF signal path (Figure 10), such that when the switch is in the ON position RF signals pass through the diodes from the radio modem to the booster unit, and when the switch is in an OFF position, RF signals are precluded by the diodes from effectively passing from the radio modem to the booster unit (Figure 9, Figure 10, Column 10 lines 17 – 24, when the diodes/switches are reversed biased that is the OFF position, when said diodes/switches are forward biased that is the ON position, the booster comprises amplifier circuits that are shut down when the diodes/switches are reversed biased thus preventing the RF signals from passing to said booster).

Barber does not teach a pair of diodes arranged back to back.

Lind teaches a pair of diodes arranged back to back (Figure 3, Column 4 lines 8 – 16).

Barber and Lind both teach an amplifier thus it would have been obvious to one of ordinary skill in the art to make a design preference and use the back-to-back configuration taught above in Lind in the amplifier of Barber as an alternative means to limiting the amplitude of the signals and thus preventing said signals from passing to said amplifier.

Regarding Claim 21, Barber in view of Lind teaches all of the claimed limitations recited in Claim 19. Barber further teaches wherein when the switch is in the ON position, current flows through the diodes and the RF impedance of the

switch is reduced, but when the switch is in the OFF position, current is not flowing through the diodes, and the RF impedance of the switch is high (Column 10 lines 17 – 24, when the diodes/switches are reversed biased said switches will be in the OFF position, which means that the impedance will be high, when said diodes/switches are forward biased said switches will be in the ON position, which means that the impedance will be low thus this is an inherent characteristic).

5. Claims 4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hanawa et al. (5,890,077) in view of Myrskog et al. (5,457,814).

Regarding Claim 4, Hanawa teaches all of the claimed limitations recited in Claim 1. Hanawa further teaches allowing the DC offset to be placed onto the connector (Column 8 lines 60 – 67, Column 9 lines 1 – 3).

Hanawa does not teach an inductor and not allowing radio frequency energy to pass up into the auto-detect circuit.

Myrskog teaches an inductor and not allowing radio frequency energy passing up a line (Column 7 lines 7 – 8).

Hanawa and Myrskog both teach a booster for a mobile terminal thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the inductor taught above in Myrskog in the booster system of Hanawa for the purpose of preventing unwanted RF signals from propagating along a transmission line.

Regarding Claim 6, Hanawa teaches all of the claimed limitations recited in Claim 5. Hanawa does not teach an inductor.

Myrskog teaches an inductor (Column 7 lines 7 – 8).

Hanawa and Myrskog both teach a booster for a mobile terminal thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the inductor taught above in Myrskog in the booster system of Hanawa for the purpose of preventing unwanted RF signals from propagating along a transmission line.

6. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hanawa et al. (5,890,077) in view of Barber (US 6,230,031 B1) and in further view of Myrskog et al. (5,457,814)

Regarding Claim 11, Hanawa in view of Barber teaches all of the claimed limitations recited in Claim 8.

Hanawa further teaches an auto detect circuit (Figure 7, Column 8 lines 38 – 39).

Hanawa in view of Barber does not teach an inductor used as part of an auto detect circuit.

Myrskog teaches an inductor (Column 7 lines 7 – 8).

Hanawa in view of Barber and Myrskog teach a booster for a mobile terminal thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the inductor taught above in Myrskog in the

booster system of Hanawa in view of Barber for the purpose of preventing unwanted RF signals from propagating along a transmission line.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond S Dean whose telephone number is 703-305-8998. The examiner can normally be reached on 7:00-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nay A Maung can be reached on 703-308-7745. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Raymond S. Dean
December 17, 2004

NAY MAUNG
SUPERVISORY PATENT EXAMINER